PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-281009

(43)Date of publication of application : 31.10.1997

(51)Int.Cl. G01M 17/06
G01M 17/007

(21)Application number : 08-089328

(22)Date of filing : 11.04.1996

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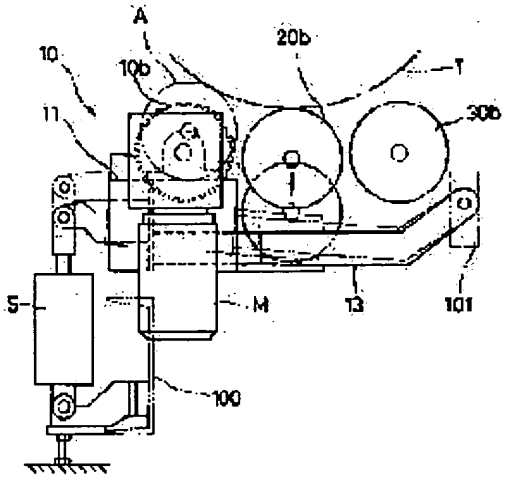
(54) COMPLEX AUTOMOBILE INSPECTION APPARATUS WITH BUILT-IN RAISING AND LOWERING-TYPE BRAKE TESTER

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a complex automobile inspection apparatus in which a control mechanism is simplified, which can be miniaturized and whose cost is reduced by using the driving source of a side slip roller at a side slip tester in common with a brake roller at a brake tester.

SOLUTION: The brake tester part 10 is composed of one pair of right and left brake rollers 10b, of a driving motor M which drives the brake rollers, of a base part 11 in which the brake rollers and the driving motor are housed and of a raising and lowering mechanism by which the base part 11 is raised and lowered freely. When a braking force is measured, the driving motor M is operated, the brake rollers 11b are turned, and the braking force is detected. When a side slip amount at a side slip tester part is measured, the brake rollers are brought into contact with a measuring wheel T by the raising action of the raising and lowering mechanism, a right measuring wheel and a left measuring wheel are turned so as to be set to a self-propelled state, and the side slip amount is detected.



LEGAL STATUS

[Date of request for examination] 26.07.1996

[Date of sending the examiner's decision of rejection]	
[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]	
[Date of final disposal for application]	
[Patent number]	2961403
[Date of registration]	06.08.1999
[Number of appeal against examiner's decision of rejection]	
[Date of requesting appeal against examiner's decision of rejection]	
[Date of extinction of right]	

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention is automobile inspection equipment of the compound die for performing detection and measurement of the amount of side slips which are measurement of the speedometer of the maintenance vehicles which ended automobile inspection maintenance, measurement of damping force, and the amount of sideslips of vehicles. In the side slip circuit tester which detects the amount of side slips with the side slip roller especially used as a free roller Both wheels of measuring object vehicles are made to drive by the drive of the brake roller of a brake circuit tester, and it is related with the compound-die automobile inspection equipment incorporating the rise-and-fall-system brake circuit tester which detects the amount of side slips with the side slip roller of a side slip circuit tester by the rotation drive of these both wheels.
[0002]
[Description of the Prior Art] Although the vehicles which run a general public road in our country are obliged to undergo inspection of vehicles about what passed a fixed period at the so-called "automobile inspection place" of the Ministry of Transport jurisdiction to which the vehicles belong periodically, automobile inspection inspection of the vehicles after a maintenance end is conducted in advance in undergoing this inspection in the repair shop which can perform automobile inspection maintenance.
[0003] Generally, although such a repair shop is called the private sector automobile inspection repair shop, the area of the site, works, etc. is restricted, therefore use of an effective site is always taken into consideration, the automobile inspection device of the compound die which made one apparatus automobile inspection devices which were made conventionally individual as part of that, and which were, such as a speedometer circuit tester and a brake circuit tester, is developed, and rationalization of the works of the limited site is attained.
[0004] furthermore, to JP,4-23207,B by the applicant of this invention The put-together type automobile inspection equipment of a speedometer circuit tester and a side slip circuit tester is indicated as automobile inspection equipment of a compound die. this put-together type automobile inspection equipment What is used as the equipment which judges rectilinear-propagation nature of vehicles by detecting conventionally the amount of side slips which is the amount of sideslips of the wheel of the right and left of vehicles which pass through the step board top of convention distance It is what is used as the equipment which judges by detecting the amount of side slips of vehicles by rotating a tire on the side slip roller made into the periphery length of this step board, this distance, or a fixed distance. Installation is aimed at in the crevice which produces this equipment between the detection rollers before and behind the aforementioned speedometer circuit tester.
[0005] Moreover, according to "compound-die automobile inspection equipment", [finishing / application by Japanese Patent Application No. No. 26477 / eight to / by the applicant for this patent] By including a brake circuit tester in the put-together type automobile inspection equipment of a speedometer circuit tester and a side slip circuit tester indicated by JP,4-23207,B it considers as the "compound-die automobile inspection equipment" with which the base section of each right and left

incorporating the side slip roller is laid free in sliding of a longitudinal direction on a fundus, makes the base section of these right and left link according to a connection mechanism, and detects the amount of side slips of both wheels Improvement in the working efficiency spent on efficient use of a works space, inspection of vehicles, or maintenance by considering as such "compound-die automobile inspection equipment" can be aimed at. Furthermore, since it considered as the roller structure of a side slip circuit tester where generating of the mechanical-loss value by mechanical frictional resistance cannot occur easily In order to be able to perform measurement and detection of the exact amount of side slips and not to make the structure complicated, it makes it possible to perform check and maintenance of a circuit tester easily.

[0006]

[Problem(s) to be Solved by the Invention] In the conventional "compound-die automobile inspection equipment" explained above, except for the speedometer roller of a speedometer circuit tester, the drive motor which serves as a driving source, respectively is arranged by each roller which the brake roller which detects the damping force of a brake circuit tester, and the side slip roller of a side slip circuit tester are equipped with the independent drive, respectively, therefore was equipped with these drives, and operation control is performed by the controlling mechanism, respectively.

[0007] When an applicant for this patent makes the driving source of the side slip roller of a side slip circuit tester share with the brake roller of a brake circuit tester paying attention to this point, the simplification of a controlling mechanism, Improvement of "compound-die automobile inspection equipment" is aimed at for the purpose of aiming at a miniaturization and cost cut of equipment itself. By equipping the wheel-base adjustment mechanism which the compound-die automobile inspection equipment incorporating the compound-die automobile inspection equipment which furthermore incorporated the rise-and-fall-system brake circuit tester, the "compound-die automobile inspection equipment" from the former, or the rise-and-fall-system brake circuit tester of this application is made to correspond to the wheel base of measuring object vehicles, and makes adjustment possible It aims at offer of the compound-die automobile inspection equipment which enables automobile inspection inspection of vehicles in the same position at a front wheel, a rear wheel, or before and rear wheel **** also to the vehicles of a different wheel base.

[0008]

[Means for Solving the Problem] As the first feature of the compound-die automobile inspection equipment which incorporated the rise-and-fall-system brake circuit tester of this invention in order to attain these purposes The speedometer circuit tester section for measuring the error of the speed indicator which was included in the frame member and attached in vehicles, In the compound-die automobile inspection equipment which consists of the side slip circuit tester section for measuring the amount of sideslips of the brake circuit tester section for measuring damping force of vehicles, and the vehicles at the time of passing through the inside of convention distance The side slip roller of a right-and-left couple with which the aforementioned side slip circuit tester section lays the measurement wheel of measuring object vehicles on the periphery side, horizontally on a fundus side, while being laid as free, the base section of each right and left which support to revolve free [rotation of the aforementioned side slip roller] by bearing material, and are laid, and this base section of each right and left the sliding the edge of the base section of each right and left being connected by the connection member, and with an amount detection means of side slips by which the aforementioned connection member detects the amount of sideslips of the wheel of each right and left of measuring object vehicles as an amount of sideslips of the whole axle It consists of a fundus which arranges the lift mechanism whose rise and fall of the base section of each aforementioned right and left are enabled. the aforementioned brake circuit tester The brake roller of the right-and-left couple for detecting damping force of measuring object vehicles, The base section which stores the drive motor rotating around the brake roller of this right-and-left couple, and the brake roller and drive motor of the aforementioned right-and-left couple, Consist of an elevator style which enables rise and fall of this base section, and measurement of the damping force of measuring object vehicles is faced. While rotating a brake roller by the operation of the aforementioned drive motor and detecting damping force, detection of the

amount of side slips is faced. It is considering as the composition by the mechanism detection of the amount of side slips being aimed at by making the measurement wheel of right and left of a brake roller of measuring object vehicles contact by elevation operation of the aforementioned elevator style, rotating a measurement wheel on either side with the operation of the aforementioned drive motor, and considering as a run state.
[0009] next -- as the second feature -- the elevator style of the aforementioned brake circuit tester -- a frame -- the bearing set up by the ends of right and left of a member and the end section are considering as the cylinder unit **** composition made to drive free [rise and fall of the swinging arm which fixes the both-sides side of the aforementioned base section in the pinching state, and supports the other end to revolve free / rotation / to the aforementioned bearing, and the aforementioned base section supported to revolve by the aforementioned bearing]
[0010] Moreover, the compound-die automobile inspection equipment which included the aforementioned rise-and-fall-system brake circuit tester in the front shank of measuring object vehicles as the above feature and a different feature is installed. While installing the compound-die automobile inspection equipment incorporating the compound automobile inspection device or the aforementioned rise-and-fall-system brake circuit tester by the BUREI circuit tester section and the speedometer circuit tester section in the back shank of measuring object vehicles It is considering as compound-die automobile inspection equipment equipped with the wheel-base adjustment mechanism the compound-die automobile inspection equipment incorporating the compound automobile inspection device or rise-and-fall-system brake circuit tester which measures a shank after this enabling sliding of wheel-base adjustment free corresponding to the wheel base of measuring object vehicles.
[0011]
[Embodiments of the Invention] The gestalt of operation of the compound-die automobile inspection equipment incorporating the rise-and-fall-system brake circuit tester of this invention which has such a feature is explained along with an accompanying drawing.
[0012] Drawing 1 of an accompanying drawing shows the plan of the compound-die automobile inspection equipment incorporating the rise-and-fall-system brake circuit tester of this invention, drawing 2 shows the front view of the compound-die automobile inspection equipment incorporating the rise-and-fall-system brake circuit tester of this invention seen from [of drawing 1] X, and drawing 3 shows the side elevation of the brake circuit tester section of this equipment seen from [of drawing 1] Y.
[0013] In drawing 1 or drawing 3 , a sign 20 shows the side slip circuit tester section which constitutes the compound-die automobile inspection equipment 1 incorporating the rise-and-fall-system brake circuit tester concerning the invention in this application. A sign 10 shows the brake circuit tester section, and a sign 30 is what shows the speedometer circuit tester section, respectively. Signs 10a and 10b show the brake roller which detects damping force of the wheel of each right and left of the brake circuit tester section 10. Signs 20a and 20b show the side slip roller which detects the amount of side slips of each right and left of the side slip circuit tester section 20, and Signs 30a and 30b show the speedometer roller of right and left of the speedometer circuit tester section 30.
[0014] In addition, it is manufactured by the state where the coefficient approximated to coefficient of friction of a road surface produced in case a wheel on either side usually grounds with a road surface by this concave streak slot (usually set as coefficient of friction mu**0.6 of a road surface as reference), i.e., a general road surface, was resembled although two or more concave streak slots are made by the peripheral face of the brake rollers 10a and 10b of the brake circuit tester section 10.
[0015] The side slip rollers 20a and 20b which are free rollers without the driving source of the right-and-left couple which the side slip circuit tester section 20 lays both wheels of the axle of measuring object vehicles, and detects the amount of side slips, The bearing 28a and 28b supported to revolve free [rotation of these side slip rollers 20a and 20b], with the base sections 22a and 22b of each right and left which lay these side slip rollers 20a and 20b, respectively The sliding roller which is the slide member to which it is attached in the base section of these base sections 22a and 22b, and these base sections 22a and 22b enable sliding on a fundus 23 (not shown), the connection which considers the

base section of each right and left which connect and slide independently on the edge of the base sections 22a and 22b of each right and left as a series of sliding -- it is constituted by the bell crank section 24 which is the link mechanism of a member, and the side slip detecting element 25 In addition, although the lift mechanism (illustration is not carried out) is arranged in the base of the aforementioned fundus 23, control of the rise and fall is performed with a series of operations of the compound-die automobile inspection equipment which mentions this lift mechanism later.

[0016] The brake rollers 10a and 10b with which the brake circuit tester section 10 makes two or more concave laesuras to the peripheral face of a right-and-left couple, The bearing 18a and 18b of these brake rollers 10a and 10b, and drive-motor M which carries out the rotation drive of the aforementioned brake rollers 10a and 10b, while fixing the base section 11 which lays these mechanisms, and the end section to the both-sides side of this base section 11 -- the other end -- the frame of this compound-die automobile inspection equipment -- with the swinging arm 13 supported to revolve to the bearing 101 boiled and made by the member 100 the base which rotates the aforementioned bearing 101 as an axial center with this swinging arm 13 -- it is constituted by the damping force detecting element (illustration is not carried out) for detecting the rise-and-fall cylinder unit S and damping force which are the elevator style of a member 11 In addition, in the case of detection of the amount of side slips by the side slip circuit tester section 20, this rise-and-fall cylinder unit S operates in the extension direction, and the aforementioned rise-and-fall cylinder unit S makes brake rollers 10a and 10b contact a measuring object wheel, and although measurement detection of the amount of side slips is performed by making a measuring object wheel into a self-propelled state by the drive of these brake rollers 10a and 10b, about the operation process, it mentions later.

[0017] the speedometer circuit tester section 30 -- the aforementioned frame -- the speedometer rollers 30a and 30b of a right-and-left couple are supported to revolve respectively free [rotation by Bearing 38a and 38b] on a member 100, and the speedometer rollers 30a and 30b on either side are made into the structure connected by distributor shaft coupling 31

[0018] The operation of the brake circuit tester section 10 in the case of conducting vehicles inspection with the compound-die automobile inspection equipment 1 incorporating the rise-and-fall-system brake circuit tester of this invention which consists of such composition, the side slip circuit tester section 20, and the speedometer circuit tester section 30 is explained.

[0019] Although the ON vehicle of the measuring object vehicles which completed automobile inspection maintenance is carried out on the base of the compound-die automobile inspection equipment 1 which included the rise-and-fall-system brake circuit tester of this invention in the travelling direction (the direction of an arrow) shown in drawing 1 Operate the lift section (not shown) of the side slip circuit tester section 20 in the elevation direction in the state which shows in (c-1) of drawing 5 in order to make the ON vehicle of measuring object vehicles easy in that case, and a fundus 23 is raised. The side slip rollers 20a and 20b are raised to the same height as the speedometer rollers 12a and 12b of the speedometer section 30, and the brake rollers 10a and 10b of the brake circuit tester section 10.

[0020] If the ON vehicle to the compound-die automobile inspection equipment 1 incorporating the rise-and-fall-system brake circuit tester of this invention of measuring object vehicles is completed Although it descends as the lift section (not shown) of the aforementioned side slip circuit tester section 20 shows (a) of drawing 5 , and inspection is started for the axle to be examined by the speedometer circuit tester section 30 and the brake circuit tester section 10 Generally, although an axle to be examined is a rear wheel, in the case of the so-called FR vehicle which uses the driving shaft of vehicles as a rear wheel, the so-called FF vehicle which uses a driving shaft as a front wheel also increases, and an axle to be examined becomes it with a front wheel in that case in recent years.

[0021] Although the case where the speedometer with which measuring object vehicles were equipped by the speedometer circuit tester section 30 is inspected is explained Both wheels of the object axle of measuring object vehicles by descent of the lift section of said side slip circuit tester section 20 Although it becomes the mode held in the crevice between the crevice configurations formed by the speedometer rollers 30a and 30b of the speedometer section 30, and the brake rollers 10a and 10b of the brake circuit tester section 10 The object axle of measuring object vehicles is made to drive by running

by himself, and the judgment of the speedometer of the measurement vehicles is performed by the difference with the detection value which obtained the speedometer with which measurement vehicles are equipped from the speedometer rollers 30a and 30b which hold at a legal convention speed and are detected in that case.

[0022] Next, the damping force measurement about the axle to be examined in the brake circuit tester section 10 when measurement of the damping force of the measuring object vehicles in the brake circuit tester section 10 is explained Inspection is started in the mode held in the crevice formed by both wheels of an object axle like said speedometer section 30 with the speedometer rollers 30a and 30b on either side and the brake rollers 10a and 10b of the brake circuit tester section 10. The rotation drive of the brake rollers 10a and 10b of the brake circuit tester section 10 is carried out by drive-motor M. Although both wheels of the object axle which will contact if these brake rollers 10a and 10b rotate by drive-motor M are interlocked with these brake rollers 10a and 10b and are rotated, detection of the damping force of these vehicles is performed by detecting the torque by which the load was carried out to these brake rollers 10a and 10b in the damping force produced to both wheels by breaking in the brake pedal with which measuring object vehicles are equipped, and carrying out the load of the damping force.

[0023] Next, if measurement of the amount of side slips which is the amount of sideslips of the measuring object vehicles by the side slip circuit tester section 20 is explained The lift section's which both wheels of the axle of the measuring object vehicles in the side slip circuit tester section 20 to be examined described above raises a fundus 23 by operation in the elevation direction. Although both wheels of an object axle are contacted in the side slip rollers 20a and 20b as shown in (c-1) of drawing 5 with this elevation, and these both wheels are further raised to an inspection starting position Since fixation is achieved with instruments, such as a hand brake or bumping post metallic ornaments, it becomes possible for both wheels of an axle to be examined to lay other different axles from the axle of this time subject of examination to the peripheral face top of the side slip rollers 20a and 20b.

[0024] If installation of a up to [the peripheral face of the side slip rollers 20a and 20b] completes both wheels of an axle to be examined, in order to make both wheels of an axle to be examined into a run state, an extension operation is performed to the position where the rise-and-fall cylinder unit S of the elevator style of the brake circuit tester section 10 shown in drawing 3 is drawing 5 (c-2), or shows the brake rollers 10a and 10b of the brake circuit tester section 10 with the sign A of drawing 3 , and both wheels of a measuring object After making the brake rollers 10a and 10b of the brake circuit tester section 10 into a contact state at both wheels of a measuring object axle Since the operation of drive-motor M of the brake circuit tester section 10 will be started, both wheels of a measuring object axle will rotate by the operation of this drive-motor M and it will be in a run state In the side slip rollers 20a and 20b which are free rollers without the aforementioned driving source, as shown in (c-2) of drawing 5 , rotation is made, and measurement detection of the amount of side slips is performed. Although detection of the amount of side slips is called for with the amount of sideslips of the wheel of right and left of the vehicles at the time of passing convention distance as explanation of the conventional "compound-die automobile inspection equipment" also described, the periphery length of the detection rollers 20a and 20b used to be manufactured as periphery length proportional to this convention distance.

[0025] Drawing 6 or drawing 7 is what shows the example of the automobile inspection line which combined the compound-die automobile inspection equipment incorporating the rise-and-fall-system brake circuit tester which is this invention, and the conventional "compound-die automobile inspection equipment." (a) of drawing 6 places in a fixed position the compound-die automobile inspection equipment which included the rise-and-fall-system brake circuit tester in the last shaft of measuring object vehicles. The wheel-base adjustment mechanism K which enables sliding of the arrangement position for the compound-die automobile inspection equipment incorporating "conventional compound-die automobile inspection equipment" or a conventional rise-and-fall-system brake circuit tester to the travelling direction of vehicles is included in a back shaft. The plan of the compound-die automobile inspection line which makes possible the last shaft in the same vehicles position, a back shaft, or before and an after shaft coincidence measurement also to the vehicles with which wheel bases differ is shown.

Moreover, (b) of drawing 6 is explanatory drawing showing the installation cross section of (a), and drawing 7 is explanatory drawing showing the state where measuring object vehicles entered the compound-die automobile inspection line which enables measurement of this last shaft, a back shaft, or all rings.

[0026] The compound-die automobile inspection equipment incorporating the rise-and-fall-system brake circuit tester explained above While what has the big axle load of the vehicles used as the measuring object, i.e., correspondence can be aimed at by considering as the part composition corresponding to the axle load in the case of large-sized vehicles, is natural The measurement is possible also to the vehicles which have the need for alignment adjustment in a back shaft. also about the measurement sequence of the side slip circuit tester section 20, the speedometer circuit tester section 30, and the brake circuit tester section 10 Of course, measurement and inspection of vehicles are enabled, without asking independent and compound measurement corresponding to situations, such as reexamination and remeasurement.

[0027]

[Effect of the Invention] According to the compound-die automobile inspection equipment incorporating the rise-and-fall-system brake circuit tester of this invention which explained above, the following effects are done so. Detection of the amount of side slips of the measuring object axle of vehicles is faced. In order to consider as the equipment which lays each detection roller on the base section which achieved right-and-left independence, replaces by the amount of sliding of the base section which enables sliding of the amount of side slips of the wheel detected with this right-and-left detection roller, and detects the amount of side slips of right-and-left both wheels While enabling efficient use of a works space by including in equipment with the function of measurement of a speedometer, or detection measurement of the damping force by the brake circuit tester, it makes it possible to aim at inspection of vehicles, and improvement in the working efficiency of maintenance.

[0028] Furthermore, while being able to perform measurement and detection of the amount of side slips exact for writing as the roller structure of a side slip circuit tester where generating of the mechanical-loss value by mechanical frictional resistance cannot occur easily, in order not to make the structure complicated, also in check of each circuit tester section, or the point of maintenance, the effect made possible [performing these processings easily] is done so.

[Translation done.]